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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,375	11/30/2000	Mithat C. Dogan	015685.P048	5245

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EXAMINER
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PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 07/14/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/726,375

Applicant(s)

DOGAN, MITHAT C.

Examiner

Sudhanshu C. Pathak

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on April 20<sup>th</sup>, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-16, 18-21, 23 and 24 is/are rejected.
- 7) ☒ Claim(s) 4, 17 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on November 30<sup>th</sup>, 2000 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Claims 1-to-24 are pending in the application.

#### ***Claim Objections***

2. Claim 24 objected to because Claim 24 is identical to Claim 6. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. **Appropriate correction is required**
3. Claim 10 objected to because of the following informalities:  
  
Claim 10 refers to the core sequence to consist of "essentially" 12 symbols. It is assumed this to mean that the core sequence comprises 12 symbols.  
  
**Appropriate correction is required** to avoid a 112 rejection as the claim implies indefiniteness failing to distinctly point out the subject matter.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 9 recites the limitation "the repetition of the core sequence comprises" in lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim. There is no mention of this limitation in Claim 1, which the above-mentioned claim depends on.
6. Claims 10-13 recites the limitation "the core sequence" in lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim. There is no

mention of this limitation in Claim 1, which the above-mentioned claim depends on.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-2, 6-8, 14-15, 19-20 & 24, is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (5,909,471) in view of Scott (6,388,997) in further view of Malkamaki et al. (5,577,024).

Regarding to Claims 1-2, 6-8, 14-15, 19-20 & 24, Yun discloses a method and system for rapid initial control signal detection in a wireless communications systems. Yun further describes a time division duplex (TDD) communication system comprising the use some of the time slots within a frequency channel used for downlink (base station (BS) -to-subscriber (SU)) transmission and other time slots within the same frequency channel for uplink (SU-to-BS) transmission (Column 1, lines 35-44). Yun also discloses receiving a broadcast burst, transmitted from time-to-time, from a base station, furthermore the broadcast burst (BCCH / SCCH) is necessary to establish the correct control channel structure and message timing with the SU (Column 2, lines 3-30). Yun also discloses once receiving the downlink BCCH burst the SU transmits a signaling control burst (SCCH), which may be transmitted on either uplink or downlink and is needed for a connection to be

established between the BS and the SU (Column 2, lines 3-30). Yun further discloses that the SCCH burst has a sequence of known bits, referred to as a known-bit sequence, code sequence, training sequence or reference sequence comprising, a preamble and a unique word sequence, furthermore Yun provides for a discrimination of this pattern in a confused tangle of competing patterns and signals that occur in the implementation of the system (Column 6, lines 38-67). Yun further discloses the SU to comprise a receiver to receive a downlink broadcast burst (Fig. 1, element 12), a transmitter to transmit the uplink burst (Fig. 1, element 14) and a processor (Fig. 2) for processing the computation needed to transmit / receive the burst in the communication system. Yun further discloses a machine-readable medium having stored data representing sequences of instructions which when executed cause the SU to perform the above mentioned operations (Fig. 2, elements 42, 44, 48, 50). However, Yun does not disclose specifically determining the timing for sending an uplink burst from receiving the BCCH or the downlink SCCH burst.

Scott discloses a system and method for timing adjustment control for efficient time division duplex (TDD) wireless communication system (Fig. 5A). Scott discloses that the communication system comprises a base station and a user station and that the communication in the system is initiated by a round trip timing transaction (Abstract, lines 1-9 & Column 2, lines 8-60 & Column 4, lines 38-67). Scott further discloses that in response to a polling message from the base station, a user station seeking to establish communication transmits a short reply message;

the base station calculates the distance of the user station by measuring the propagation delay with respect to the receipt of the of the reply message (Abstract, lines 9-13 & Fig. 8A-B). The base station then sends a timing adjustment command to the user station instructing the user station to either advance or retard its according to the calculated distance so as to minimize the guard time between the time slots (Abstract, lines 13-17) and minimize interference and collisions between the users (Column 4, lines 58-63). Furthermore, the base station periodically monitors the user station as described above to maintain timing control with the user (Abstract, lines 17-20). Scott also discloses determining the nominal timing relative to a frame of the broadcast burst (Fig. 5A-B & Fig. 7 & Column 9, lines 57-67 & Column 10, lines 1-55 & Column 13, lines 48-60 & Column 14, lines 1-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the polling procedure to determine the timing as described in Scott can be implemented in the protocol as described in Yun in the BCCH (downlink) / SCCH (uplink & downlink) control channel sequence. However, Yun in view of Scott does not disclose selecting a training sequence at the receiving station from among a plurality of training sequences.

Malkamaki discloses a communication method for digital cellular radio system comprising multiple base stations and mobile units (Abstract, lines 1-5). Malkamaki also discloses that each mobile unit transmits; a different predetermined bit sequence, within a burst, which are substantially orthogonal (Abstract, lines 18-30). Malkamaki also discloses that the predetermined bit sequence is analogous to a

training sequence in known TDMA methods having good auto correlation properties (Column 7, lines 35-59). Malkamaki further discloses the bit sequence can be randomly selected from a bit sequence set, and different bit sequence sets can be provided for different channel uses, and the bit sequences are substantially orthogonal (Column 7, lines 20-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention the selection of the training sequences from the training sequence set can be implemented in the protocol as described in Yun in view of Scott to determine the timing synchronization between the mobile unit and the base station, so as to avoid collisions between the communications between multiple mobile units and a base station, thus satisfying the limitations of the claims.

9. Claims 3, 16 & 21, is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (5,909,471) in view of Scott (6,388,997) in further view of Malkamaki et al. (5,577,024) in further view of Kockmann et al. (WO 99/66650).

Regarding to Claims 3, 16 & 21, Yun in view of Scott in further view of Malkamaki discloses a method for determining the timing for transmitting an uplink burst, from the received downlink burst and transmitting an uplink burst using a randomly selected training sequence from a set of training sequences as described above. However, the above-mentioned references do not specify the algorithm for randomly selecting the training sequence to comprise generating a random number and applying the random number to select from among the set of predetermined training sequences.

Kockmann discloses an algorithm for randomly selecting a carrier frequency comprising generating a random number and applying the random number to select from among the set of predetermined carrier frequencies (Abstract, lines 1-12). Kockmann further discloses the method to be implemented in a mobile station and/or base station of a mobile radio station (Abstract, lines 12-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Kockmann teaches an algorithm for randomly selecting a parameter from among the set of predetermined parameters and this can be implemented in the in the protocol as described in Yun in view of Scott in further view of Malkamaki so as to select a training sequence from among a set of predetermined training sequences, thus satisfying the limitations of the claims. Furthermore, the selection of a carrier frequency instead of training sequences is a matter of design choice or application of the algorithm for randomly selecting a predefine parameter, from among a set of predefined parameters.

10. Claims 5, 18 & 23, is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (5,909,471) in view of Scott (6,388,997) in further view of Malkamaki et al. (5,577,024) in further view of Jokinen et al. (6,038,238).

Regarding to Claims 5, 18 & 23, Yun in view of Scott in further view of Malkamaki discloses a method and system for rapid initial control signal detection in a time division duplex (TDD) wireless communications systems comprising determining the timing for transmitting an uplink burst, from the received downlink burst and transmitting an uplink burst using a randomly selected training sequence from a set



of training sequences as described above. However, Yun in view of Scott in further view of Malkamaki does not disclose receiving an indication of a set of predetermined training sequences for use in selecting a training sequence from the received downlink burst.

Jokinen discloses that in a GSM wireless communications system the training sequence to be used by the mobile station is sent from a burst from the base station, from the list of the predetermined training sequences (Column 2, lines 44-51 & Column 3, lines 1-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Jokinen teach that a downlink burst received by the mobile station provides an indication of the training sequence to be used by the mobile station from a set of predetermined training sequences and this can be implemented in the communication protocol as described in Yun in view of Scott.

11. Claims 9 & 10, is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun (5,909,471) in view of Scott (6,388,997) in further view of Malkamaki et al. (5,577,024) in further view of Yellin et al. (6,546,042).

Regarding to Claims 9 & 10, Yun in view of Scott in further view of Malkamaki discloses a method and system for rapid initial control signal detection in a time division duplex (TDD) wireless communications systems comprising determining the timing for transmitting an uplink burst, from the received downlink burst and transmitting an uplink burst using a randomly selected training sequence from a set of training sequences as described above. However, Yun in view of Scott does not

disclose the training sequence comprising a repetition of the core sequence successively a specified number of times and the core sequence consisting of 12 symbols.

Yellin discloses a method and apparatus for receiving a wireless communication signal. Yellin discloses a training sequence broken into a plurality of sections each including segments at pre-specified locations (Column 7, lines 11-15 & Fig. 2). Yellin further discloses that the signal is basically constructed of a repetition of a core sequence successively a specified number of times (Column 7, lines 20-40 & Fig. 2). Furthermore, Yellin discloses that the core sequence consists of "L" samples. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the training sequence as described in Yellin into the training sequence selected by the user terminal as described in Yun in view of Scott. Furthermore, there is no specific criticality of implementing the core training sequence to consist of 12 symbols this is a matter of design choice.

#### ***Allowable Subject Matter***

12. Claims 4, 17 & 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1-3, 5-16, 18-21 & 23-24 have been considered but are moot in view of the new ground(s) of rejection.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (703)-305-0341. The examiner can normally be reached on M-F: 9am-6pm.
  - If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703)-305-4714.
  - The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak



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